

Proposed Building Regulation  
Town of Epping, New Hampshire  
Epping Residential Development – Fire Department Cistern Requirements

1. Cisterns shall be required for developments as follows:
  - a. If the new development is within ½ mile (measured by roadways from the beginning of the new road or for frontage lots, the furthest lot) of a cistern or fire hydrant, a cistern will not be required.
  - b. If the development has 10 or more buildings a cistern will be required. However, if the parent parcel is subdivided again within 10 years and the total of lots (old and new) equals 10 or more homes a cistern will be required.
  - c. If the new development has an extensive road network or more than 35 dwelling units more cisterns may be required at the discretion of the Fire Chief or his/her designee.
  
2. The cistern requirements shall be as follows:
  - a. A minimum capacity of 30,000 gallons.
  - b. Suction capacity shall be capable of delivering 1,000 gallons per minute (GPM) for three quarters of the cistern capacity.
  - c. The entire cistern shall be rated for highway loading, unless exempted by the Fire Chief or his/her designee.
  - d. Drawings of the design are for estimating general requirements and design purposes only and are not intended for use as design per NFPA 22, Standard for Water storage tanks for Fire Protection systems and NFPA 1142 for Suburban and Rural water supply.
  - e. Cisterns shall be sited to the particular location by a registered engineer and approved by the Fire Chief or his/her designee.
  - f. Tank construction materials shall be as follows:
    - I. Fiberglass underground tank or tanks

- II. The Fiberglass tank should sit level on a 3-inch layer of crushed gravel for protection however if this differs from manufacturers recommendation, follow manufacture guidelines.
- III. The tank should be secured with straps so it's secured to the ground according to the manufacturer's recommendations.
- IV. Meet the performance as noted in paragraph 2 of this regulation.

3. Suction and Fill Piping Materials:

- a. All suction and fill piping shall be in accordance with current NFPA Standards as outlined in both NFPA 1141, Standard for Fire Protection infrastructure in Suburban and Rural areas, 2008 edition and NFPA1142, Standard for Water Supplies for Suburban and Rural firefighting, 2007 edition.
- b. The filler pipe shall be six-inch (6) ASTM Schedule 40 PVC with glued joints with a Stortz fitting. The filler pipe shall be braced to ensure durability during filling operations. The Fire Chief or his/her designee shall approve brace configuration and installation.
- c. The filler pipe shall be thirty-inches (30) above final backfill grade.
- d. A thirty-two-inch (32) diameter manhole shall allow the unit to be secured with a padlock and shall be approved by the Fire Chief or his/her designee. The Epping Fire Department will supply the padlock.

4. Backfill and Bedding:

- a. All backfill material shall be per manufacturer installation standards.
- b. The entire cistern shall be completed and inspected by the Fire Chief or his/her designee before any backfilling is done.
- c. Bedding for the cistern shall be per manufacturer installation standards. No fill shall be used under the stone.
- d. The perimeter of the tank at the cover joint shall be sealed with eight-inch (8) PVC water stop.

- e. After backfilling, bollards shall protect the tank.
- f. The backfill over the tank shall meet be per manufacturer installation standards.
- g. Insulation shall be per manufacturer installation standards.
- h. All backfill shall extend at least ten feet beyond the edge of the cistern and then have a maximum of 3:1 slope, loamed and seeded.

5. Vehicle Accessibility Requirements:

- a. The distance from the bottom of the suction pipe to the fire apparatus connection shall not exceed fourteen (14) feet.
- b. The pitch of the shoulder and vehicle pad from the edge of the pavement to the fire apparatus suction connection shall be one (1) percent to six (6) percent downgrade.
- c. The shoulder and vehicle pad shall be of sufficient length to allow convenient access to the suction connection when the fire apparatus is set at 45 degrees to the road.
- d. The shoulder and vehicle pad section shall consist of asphalt pavement or screened gravel with no stones larger than one and one-half (1-1/2) inches and shall be compacted to 95 percent of its original volume in accordance with ASTM D1557.
- e. The suction fitting shall be located between twenty-two (22) and twenty-four (24) feet from the nearest running edge of road pavement.
- f. Two (2) concrete filled steel bollards shall be placed in a manner to protect the hydrant. The base of these bollards shall extend below the frost line. The upper portion of the bollards shall extend thirty-inches (30) above the level of the gravel where vehicle wheels will be located when cistern is in use.

6. All horizontal suction piping shall slope slightly uphill toward the fire apparatus connection.

7. The installer is responsible for completely filling and maintaining the cistern until accepted by the Fire Chief or his/her designee. A bond should be issued for the cistern and turned over to the town the same day the road is bonded.\*\*\*

8. The Fire Chief or his/her designee shall conduct inspections during the construction and installation process as follows:

- a. Excavation
- b. Installation of base material
- c. Tank placement
- d. Piping installation
- e. Backfilling

9. Alternative fire protection options may be considered including sprinklers and dry hydrants subject to review and approval by the Fire Department.

\*\*\*Checking with town attorney to see if this is allowed.